

REMARKS

Claims 1-15 are pending in the present application. Claims 11-15 are withdrawn from consideration.

Claim Rejections - 35 U.S.C. §102(b)

Claims 1-4, 6 and 7 are rejected under 35 U.S.C. §102(b) as being anticipated by Tolliver et al. (U.S. Patent No. 5,069,964). The Examiner admits that Tolliver et al. does not explicitly disclose the residual rate or the fall time of the pressure sensitive adhesive as claimed in claims 1-4. However, the Examiner asserts that these properties would be inherent because Tolliver et al. uses the "same" claimed pressure sensitive adhesive, e.g. a rubber-based resin or an acrylic resin (col. 10, lines 39-60).

Claim Rejections - 35 U.S.C. §103(a)

Claim 5 is rejected under 35 U.S.C. §103(a) as being unpatentable over Tolliver et al. The Examiner admits that Tolliver et al. fails to disclose wherein a thickness of the pressure-sensitive adhesive layer at a part where the groove is not formed on the rear face side of the resin support sheet ranges between 20 μm and 110 μm inclusive.

The Examiner asserts that the exact thickness of the adhesive is a result-effective variable with regard to the bonding strength to target, which would require routine experimentation to determine the optimum value of a result effective variable, such as thickness, in the absence of a showing of criticality in the claimed thickness.

Claims 8-10 are rejected under 35 U.S.C. §103(a) as being unpatentable over Tolliver et al. in view of Ojeda et al. (U.S. Patent No. 6,326,072).

The Examiner admits that Tolliver et al. fails to disclose the protective liner is resin release film made of an unstretched polypropylene film or a low-density polyethylene film. The Examiner notes that Ojeda et al. teaches in the background information that various materials are known to be used to manufacture release liners such as unstretched polypropylene (col. 1, lines 37-47). The Examiner asserts that Ojeda et al. also discloses that release liners are used in transportation and storage of self-sticking products (col. 1, lines 19-23). The Examiner concludes that it would have been obvious to use a known material such as unstretched polypropylene film as taught by Ojeda et al. as the release liner on Tolliver et al.

The Examiner admits that the combination of Tolliver et al. and Ojeda et al. do not explicitly disclose the Young's modulus or the release film as claimed in claim 9. However, the Examiner asserts that these properties would be inherent since the combination of Tolliver et al. and Ojeda et al. uses the "same" claimed release film, e.g. unstretched polypropylene film.

Applicants respectfully disagree with the rejection, and submit that there would have been no prompting or suggestion to modify any of the prior art to reach the present invention.

Applicants note that the retroreflective sheet of claim 1 comprises: plural retroreflective elements; a resin support sheet; a transparent cover film disposed on a surface side of the resin support sheet; and a pressure-sensitive adhesive layer formed on a rear face side of the resin support sheet. In the claimed sheet, the retroreflective elements are held in at least one of the

resin support sheet and the cover film; the resin support sheet and the cover film are connected to each other by heat press emboss forming from the rear face side of the resin support sheet so as to form a connection part; a groove of the connection part is formed on the rear face side of the resin support sheet, and the groove is filled with a part of the pressure-sensitive adhesive layer.

Applicants note that the claim further employs functional language to describe the claimed material. Specifically, the retroreflective sheet includes the functional limitations wherein

a residual rate of the pressure-sensitive adhesive layer ranges between 10% and 50% inclusive, and

a fall time of the pressure-sensitive adhesive layer ranges between 10 hours and 150 hours inclusive, where the residual rate (%) = (a residual displacement ÷ an initial displacement) × 100,

the initial displacement represents a displacement (mm) between a flat plate and the retroreflective sheet measured by a Yamamoto's cohesion tester, which occurs after 5 minutes from steps of: pressing the retroreflective sheet with a size of 10 mm × 5 mm onto the mirror-surfaced flat plate of a SUS304 steel plate specified by JISG 4305 with a width of 5 mm, using a pressing device specified by JIS Z 0237; adding loads of 17 g respectively to both ends of the retroreflective sheet via strings immediately after the pressing; and further applying a measurement load of 200 g to one of the loads,

the residual displacement represents a displacement occurring between the flat plate and the retroreflective sheet after 10 minutes from removal of the load of 200 g, and

the fall time represents a fall time of the retroreflective sheet with a load of 9.8 N imposed in a holding power test at 40 °C in accordance with a JISZ0237 holding power test.

The Examiner admits that Tolliver et al. does not explicitly disclose the residual rate or the fall time of the pressure sensitive adhesive as claimed in claims 1-4. However, the Examiner asserts that these properties would be *inherent* because Tolliver et al. uses the “same” claimed pressure sensitive adhesive, e.g. a rubber-based resin or an acrylic resin (col. 10, lines 39-60).

The Examiner is incorrectly asserting that the material of the cited reference would inherently exhibit the claimed functional limitations.

With respect to the concept of inherency, according to the Manual of Patent Examining Procedure (MPEP) §2112(IV)), “To establish inherency, the extrinsic evidence ‘must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.”

The retrospective sheet of the present invention is characterized in that “a residual rate of the pressure-sensitive adhesive layer ranges between 10% and 50% inclusive, and a fall time of the pressure-sensitive adhesive layer ranges between 10 hours and 150 hours inclusive”.

Further, the residual rate and the fall time of the pressure-sensitive adhesive layer can be adjusted by forming the pressure-sensitive adhesive layer by, for example, appropriately setting kinds and contents of a resin and a hardening agent as materials of the pressure-sensitive adhesive layer (see page 13, lines 4 to 8 of the specification as filed).

In other words, it is necessary to select the kinds and contents of the materials so that the residual rate and the fall time should fall in the ranges of the present invention (see page 11, lines 23 to 37, and page 12, lines 1 to 11 of the specification as filed).

Still further, in the present invention, it is described that examples of a preferable resin include rubber-based resins and acrylic resins, but they have to satisfy the requirement that “a residual rate of the pressure-sensitive adhesive layer ranges between 10% and 50% inclusive, and a fall time of the pressure-sensitive adhesive layer ranges between 10 hours and 150 hours inclusive”. Even with use of a rubber-based resin or an acrylic resin, if the residual rate and the fall time are out of the foregoing ranges, the effect of the present invention cannot be achieved.

More specifically, Examples 1 to 4 and Comparative Examples 1 to 3 of the present invention show examples of a pressure-sensitive adhesive layer made of an acrylic resin. Different pressure-sensitive adhesive layers were formed that were different regarding the kinds of the acrylic resin and the hardening agent, and the contents of the same. As a result, Comparative Example 1 showed a fall time longer than 150 hours and a residual rate smaller than 10 %; Comparative Example 2 showed a fall time shorter than 10 hours and a residual rate greater than 50 %; and Comparative Example 3 showed a fall time longer than 150 hours, even though it showed a residual rate falling in an appropriate range (see the results shown in Table 1).

Therefore, even if an acrylic resin is used, the resultant product does not always show the residual rate and the fall time falling in the appropriate ranges of the present invention. This applies to the case where a rubber resin is used.

Tolliver et al. discloses an encapsulated-lens-type retroreflective sheet, and describes an adhesive for attaching the sheet to a substrate.

More specifically, Tolliver et al. discloses, as examples of adhesives, nitrile butadiene rubbers including both hydrogenated and non-hydrogenated rubbers with varying acrylonitrile content (e.g., from about 10 to 45 weight percent), and terpolymers such as acrylonitrile/butadiene/isoprene (column 10, lines 54 to 60).

Tolliver et al. teaches with respect to its adhesive in column 10, lines 41-60 that, "Typically an adhesive, referred to herein as a mounting adhesive, will be applied to the back side of the encapsulating member of a sheeting of the invention to bond same to a substrate. Illustrative examples of such adhesives include heat-activated adhesives, pressure-sensitive adhesives, etc. Selection of such adhesives is dependent in part upon the characteristics of the back of the encapsulating member and the substrate to which the sheeting is to be applied. For instance, sheetings which are to be applied to the back side of a traffic cone will typically be made with a "plasticizer-tolerant" adhesive, i.e., an adhesive which will provide sufficient bond strength and cohesive strength even when contacted or penetrated by plasticizer. Illustrative examples of suitable mounting adhesives include adhesives based on nitrile butadiene rubber including both hydrogenated and non-hydrogenated rubbers with varying acrylonitrile content,

e.g., from about 10 to about 45 weight percent, and terpolymers such as acrylonitrile/butadiene/isoprene.”

Thus, it may be seen that Tolliver et al. merely teaches a great variety of adhesives, and certainly can not be accurately characterized as teaching “the same” adhesive as that claimed.

Besides, Tolliver et al. has no description about the object of the present invention, which is the prevention of an appearance abnormality of the sheet such as blisters, bubbles, wrinkles, exfoliations, which may occur over the course of time after the adhesion to a substrate.

The present invention can solve the problem of occurrence of an appearance abnormality by adjusting (selecting) the kinds and contents of materials of the pressure-sensitive adhesive layer so that the residual rate and the fall time fall in specific appropriate ranges, i.e., a residual rate of the pressure-sensitive adhesive layer ranges between 10% and 50% inclusive, and a fall time of the pressure-sensitive adhesive layer ranges between 10 hours and 150 hours inclusive.

For example, an acrylic resin or a rubber-based resin are mentioned as examples of a preferable resin for forming the pressure-sensitive adhesive layer having the characteristics of the present invention, and specific Examples of the same are described (see page 8, lines 14 to 34 of the specification as filed). Besides, as components for the acrylic resins, various kinds of components are mentioned, as described in page 8, line 35 to page 11, line 6 of the specification as filed. Therefore, it is essential to select a pressure-sensitive adhesive layer having the characteristics of the present invention among the foregoing examples.

Thus, the characteristics of the present invention are *not* inherent to the acrylic resins and the rubber-based resins, and it is required to appropriately set, adjust, and select the kinds of components used and contents thereof such as the kind and content of materials for the hardening agent and the resin.

Tolliver et al. teaches neither the desired properties of its adhesives nor the reasons for such properties. Therefore, there would have been no prompting for one skilled in the art to have selected any particular property and directed that property into any particular range to reach the present invention.

Claims 2-10 are dependent from claim 1 and necessarily include its limitations. Therefore, because claim 1 is patentably distinguished over the cited references, claims 2-10 are necessarily be distinguished as well.

In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

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If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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